# (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 6 January 2005 (06.01.2005)

### (10) International Publication Number WO 2005/000107 A3

(51) International Patent Classification7:

A61F 2/02

(21) International Application Number:

PCT/US2004/020441

(22) International Filing Date: 25 June 2004 (25.06.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/482,829

25 June 2003 (25.06.2003)

- (71) Applicants (for all designated States except US): THE CHILDREN'S HOSPITAL OF PHILADELPHIA [US/US]; 34th Street and Civic Center Boulevard, Philadelphia, PA 19104 (US). THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA [US/US]; 3160 Chestnut Street, Suite 200, Philadelphia, PA 19104 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): SHASTRI, Venkatram, Prasad [IN/US]; 1303 Hillmeade Drive, Nashville, TN 37221 (US). GOOCH, Keith, J. [US/US]; 43 Letitia, Media, PA 19063 (US). NICHOL, Jason, W. [US/US]; 56 S. Canal Street, Yardley, PA 19067 (US).
- (74) Agent: VOLIN, Marina, E.; Caesar, Rivise, Bernstein, Cohen & Pokotilow, LTD., Seven Penn Center, 1635 Market Street, 11th Floor, Philadelphia, PA 19103 (US).

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  $\mathsf{FR}, \mathsf{GB}, \mathsf{GR}, \mathsf{HU}, \mathsf{IE}, \mathsf{IT}, \mathsf{LU}, \mathsf{MC}, \mathsf{NL}, \mathsf{PL}, \mathsf{PT}, \mathsf{RO}, \mathsf{SE}, \mathsf{SI},$ SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Declaration under Rule 4.17:

of inventorship (Rule 4.17(iv)) for US only

#### Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 29 December 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: RETENTION OF ENDOTHELIAL CELLS ON VASCULAR GRAFTS

(57) Abstract: An implantable device including a surface containing a plurality of first zones and a plurality of second zones depressed relative to the first zones so as to provide valleys below a plane defined by the first zones, wherein a first zone to second zone width ratio is non-random throughout the device; and a biologically active agent in the valley, wherein the device is adapted to be implanted within an organism such that when said surface is subjected to a flow causing a fluid-induced shear stress, the second zone has a reduced level of the fluid-induced shear stress relative to the first zone in an amount adequate to selectively retain the biologically active agent within the valley.

